



Confirmation of Product Type Approval

Please refer to the "Service Restrictions" shown below to determine if Unit Certification is required for this product.

This certificate reflects the information on the product in the ABS Records as of the date and time the certificate is printed.

Pursuant to the Rules of the American Bureau of Shipping (ABS), the manufacturer of the below listed product held a valid Manufacturing Assessment (MA) with expiration date of 20/SEP/2020. The continued validity of the Manufacturing Assessment is dependent on completion of satisfactory audits as required by the ABS Rules.

And; a Product Design Assessment (PDA) valid until 23/AUG/2020 subject to continued compliance with the Rules or standards used in the evaluation of the product.

The above entitle the product to be called Product Type Approved.

The Product Design Assessment is valid for products intended for use on ABS classed vessels, MODUs or facilities which are in existence or under contract for construction on the date of the ABS Rules used to evaluate the Product.

ABS makes no representations regarding Type Approval of the Product for use on vessels, MODUs or facilities built after the date of the ABS Rules used for this evaluation.

Due to wide variety of specifications used in the products ABS has evaluated for Type Approval, it is part of our contract that; whether the standard is an ABS Rule or a non-ABS Rule, the Client has full responsibility for continued compliance with the standard.

Product Name: Pipe Coupling
Model Name(s): UNI-FLEX

Presented to:
UNI-COUPLING B.V.
KERKDIJK- ZUID 11A
Netherlands

Intended Service: Pipe couplings for approved applications, as per 4-6-2/Tables 10 and 11 of the Rules, in shipboard and offshore piping systems.

Description: Axially non-restraint slip type pipe couplings with detachable sealing and for plain-ended pipes of Carbon steel, Stainless steel, Cu and CuNiFe. T-profile insert is used to prevent creepage on the pipe and optional electrical conductivity clips.
MATERIALS: W5 (Standard) Casing : Type 1.4571 / Grade 316 Ti Bolts : Type A4-80 / Grade 316 Ti Bars : Type 1.4571 / Grade 316 Ti Anchoring rings : Type 1.4310 / Grade 301 Strip Insert (Option) : Type 1.4571 / Grade 316 Ti W4 (Optional) Casing : Type 1.4301 / Grade 304 Bolts : Type A4-80 / Grade 316 Ti Bars : Type 1.4301 / Grade 304 Anchoring rings : Type 1.4310 / Grade 301 Strip Insert (Option) : Type 1.4571 / Grade 316 Ti W2 (Optional) Casing : Type 1.4016 / Grade 301 Bolts : Type A4-80 / Grade 316 Ti Bars : Type 1.0760 / AISI 1141 Anchoring rings : Type 1.4310 / Grade 301 Strip Insert (Option) : Type 1.4571 / Grade 316 Ti Sealing Ring: EPDM and NBR elastomer.

Ratings: Range of diameter & Pressure: 20.5 mm OD up to 412 mm OD, 2.5 bar up to 16 bar. Temperature Range EPDM : -30C up to +125C. Temperature Range NBR : -20C up to +80C. Medium EPDM: all qualities of water, waste water, air, solids and chemical products. Medium NBR : water, gas, oil, fuel, and other hydrocarbons. Please see attached table below for detailed approval range.

Service Restrictions: Unit Certification is not required for these products. Only EPDM/NBR sealing is approved for use on ABS classed, vessels, MODU or facilities. Couplings are not to

be used for joining plastic pipes. Unrestrained slip-on joints are to be used only in cases where compensation of lateral pipe deformation is necessary. Usage of these joints as the main means of pipe connection is not permitted. Slip-on joints are to be accessible for inspection. The couplings are not acceptable in the following locations and as per 4-6-2/ Table 10: 1. Class 1 piping. 2. Co2, Starting and control air systems. 3. Pipe lines carrying toxic fluids. 4. Inside machinery spaces of category A or accommodation spaces for: a. Main lines of inert gas systems. b. Pipe systems for flammable liquids including corresponding vent and sounding pipes. c. Bilge lines 5. Steam pipe systems, except for pipes on weather decks of oil and Chemical tankers with design pressure of 10 bar or less. 6. Bilge lines in other machinery spaces or high fire risk spaces. 7. Direct attachment to sea openings or tanks containing toxic and flammable fluids. Scuppers and discharge (overboard). Deck drains, except for pipes above the freeboard deck. 8. Pipe lines in cargo hold, tanks and other spaces which are not easily accessible. 9. In pump rooms and open decks for inert gas main and distribution lines. 10. Fire main, water spray and sprinkler systems. 11. Piping systems with impulse pressure load other than water hammer. 12. On board of IWW Tankers in cargo lines other than diesel oil, fuel oil, petroleum crude oil, petroleum distillates, lubricating oil and bilge water.

Comments:

The selection of the fittings and pipes for the corresponding application and the installation of mechanical pipe joints are to be in accordance with the manufacturer's assembly instructions. Where special tools and gauges are required for installation of the joints, these are to be specified and supplied as necessary by the manufacturer. These special tools are to be kept onboard. The maximum pipe misalignment and maximum allowable axial movement are not to exceed the manufacturer's recommendations. Piping must be effectively secured and supported to prevent the couplings from being subjected to end load pressures. Supports or hangers are not to be used to force alignment of piping at the point of connection.

Notes / Documentation:

Drawing No. UNI COUPLING Technical Manual, Technical Manual, Revision: 1, Pages: - Drawing No. 0-1-L-F-W5-E, Fire test 0, Revision: 1, Pages: 1 Drawing No. 1, Housing, Revision: 1, Pages: 1 Drawing No. 1-1-L-F-W5-E, Fire test 1, Revision: 1, Pages: 1 Drawing No. 1-1-L-G-W5-E, Vibration test 1, Revision: 1, Pages: 1 Drawing No. 1.1, Approval test description, Revision: 1, Pages: 1 Drawing No. 10c-2-S-G-G-W5-E, Vibration test 10c, Revision: 1, Pages: 1 Drawing No. 10d-2-S-G-G-W5-E, Fire test 10d, Revision: 1, Pages: 1 Drawing No. 13c-2-S-G-C-W5-E, Vibration test 13c, Revision: 1, Pages: 1 Drawing No. 14c-2-S-G-G-W5-E, Vibration test 14c, Revision: 1, Pages: 1 Drawing No. 14e-2-S-G-G-W5-E, Fire test 14e, Revision: 1, Pages: 1 Drawing No. 15c-2-S-G-G-W5-E, Vibration test 15c, Revision: 1, Pages: 1 Drawing No. 15e-2-S-G-G-W5-E, Fire test 15e, Revision: 1, Pages: 1 Drawing No. 1d-1-L-G-W5-E, Fire test #1d, Revision: 1, Pages: 1 Drawing No. 2, Bridge, Revision: 2, Pages: 2 Drawing No. 2-1-L-G-W5-E, Fire test 2, Revision: 1, Pages: 1 Drawing No. 2.1, Technical Manual, Revision: 1, Pages: 1 Drawing No. 213986 EPDM 70 MPA NRW EN 681_vsi testi, EPDM Material Characterization, Revision: 1, Pages: - Drawing No. 2c-1-L-G-W5-E, Vibration test 2c, Revision: 1, Pages: 1 Drawing No. 3, Gripring, Revision: 3, Pages: 3 Drawing No. 3,2, Pressure tests Grip, Revision: 1, Pages: 1 Drawing No. 3,3, Pressure tests Flex, Revision: 1, Pages: 1 Drawing No. 3.1, Pressure test Calibration Certificates, Revision: 1, Pages: 1 Drawing No. 3C-2-S-F-B-W5-E, Fire test 3C, Revision: 1, Pages: 1 Drawing No. 3c-1-L-G-W5-E, Vibration test 3c, Revision: 1, Pages: 1 Drawing No. 4, Gasket, Revision: 4, Pages: 4 Drawing No. 4,2, NEN-EN-ISO 9001:2008, Revision: 1, Pages: 1 Drawing No. 4F-1-L-G-W5-E, Fire test 4F, Revision: 1, Pages: 1 Drawing No. 4c-2-S-F-B-W5-E, Fire test 4c, Revision: 1, Pages: 1 Drawing No. 5, Bolts, Revision: 5, Pages: 5 Drawing No. 5.1, Markering, Revision: 1, Pages: 1 Drawing No. 5F-L-G-W5-E, Fire test 5F, Revision: 1, Pages: 1 Drawing No. 5c-1-L-G-E-W5-E, Vibration test 5c, Revision: 1, Pages: 1 Drawing No. 6, Trunions, Revision: 6, Pages: 6 Drawing No. 6,1, Fire Test Calibration Certificates, Revision: 1, Pages: 1 Drawing No. 6c-2-F-G-W5-E, Fire test 6c, Revision: 1, Pages: 1 Drawing No. 6e-1-L-G-W5-E, Fire test 6e, Revision: 1, Pages: 1 Drawing No. 7, Washers, Revision: 7, Pages: 7 Drawing No. 7.1, Part Number System, Revision: 1, Pages: 1 Drawing No. 7d-1-L-G-E-W5-E, Vibration test 7d, Revision: 1, Pages: 1 Drawing No. 8, Flame protection housing, Revision: 8, Pages: 8 Drawing No. 8,1,

Technical Manual, Revision: 1, Pages: 1 Drawing No. 8c-2-S-G-B-W5-E, Vibration test 8c, Revision: 1, Pages: 1 Drawing No. 8e-2-S-G-B-W5-E, Fire test 8e, Revision: 1, Pages: 1 Drawing No. 9, Flame protection material, Revision: 9, Pages: 9 Drawing No. 9c-2-S-G-C-W5-E, Fire test 9c, Revision: 1, Pages: 1 Drawing No. Correspondence, NEN-EN-ISO 14001:2004, Revision: 1, Pages: 1 Drawing No. Correspondence, Fire test 3, Revision: 1, Pages: 1 Drawing No. Final test plan, Final Test plan, Revision: -, Pages: - Drawing No. Kopie von UNI-Flex ABS Type Approval Range, UNI Flex range, Revision: -, Pages: - Drawing No. Part Number System, Part Number Interpretation, Revision: 1, Pages: - Drawing No. Type Approval Certificate UNI-Flex, Lloyds Approval Uni-Flex, Revision: 1, Pages: - Drawing No. Type Approval Certificate UNI-Grip, Lloyds Approval Uni-Grip, Revision: 1, Pages: - Drawing No. TypeApprovalForm, Type approval form, Revision: -, Pages: - Drawing No. UNI COUPLING technical-manual-UK-05-01-2015, Technical manual, Revision: -, Pages: - Drawing No. Uni-Couplings -PDA-Typeapproval-Range, Uni-Coupling Product Approval Range, Revision: 1, Pages: - Drawing No. Test Report compound 213052 acc to EN 682 DVGW - VP 406, Test report, Revision: 1, Pages: -

Term of Validity:

This Product Design Assessment (PDA) Certificate 15-LD1409351-PDA, dated 24/Aug/2015 remains valid until 23/Aug/2020 or until the Rules or specifications used in the assessment are revised (whichever occurs first). This PDA is intended for a product to be installed on an ABS classed vessel, MODU or facility which is in existence or under contract for construction on the date of the ABS Rules or specifications used to evaluate the Product. Use of the Product on an ABS classed vessel, MODU or facility which is contracted after the validity date of the ABS Rules and specifications used to evaluate the Product, will require re-evaluation of the PDA. Use of the Product for non ABS classed vessels, MODUs or facilities is to be to an agreement between the manufacturer and intended client.

ABS Rules:

Classification of Drilling Systems 2012 (Up-dated Feb 2014): 4/Table 1, 5/3.3, 6/7.1. Rules for Building and Classing Steel Vessels (2015): 1-1-4/7.7, 1-1-A3 and 4, 2-3-12, 2-4-4/17, 4-6, 4-6-2/5.9, 5.15 and 9.6. Mobile Offshore Drilling Units (2015): 1-1-4/9.7, 1-1-A2 and 3, 4-2-2/5. Bulk Carriers for Service on Great Lakes (1978) Up-date April 2008: 1-1-4/7.7, 1-1-A3 and 4. Steel Vessels for Service on Rivers and Intracoastal Waterways (2015): 1-1-4/7.7, 1-1-A3 and 4. Steel Vessels Under 90 Meters (295 Feet) in Length (2015): 1-1-4/7.7, 1-1-A3 and 4, Offshore Support Vessels (2015): 1-1-4/7.7, 1-1-A3 and 4.

**National Standards:
International Standards:**

IACS P2.11 (corr.1 2007) with ISO 19921(first edition 2005-10-01) as fire endurance test.

**Government Authority:
EUMED:
Others:**

Model Certificate	Model Certificate No	Issue Date	Expiry Date
PDA	15-LD1409351-PDA	24/AUG/2015	23/AUG/2020



ABS Programs

ABS has used due diligence in the preparation of this certificate and it represents the information on the product in the ABS Records as of the date and time the certificate was printed. Type Approval requires Drawing Assessment, Prototype Testing and assessment of the manufacturer's quality assurance and quality control arrangements. Limited circumstances may allow only Prototype Testing to satisfy Type Approval. The approvals of Drawings and Products remain valid as long as the ABS Rule, to which they were assessed, remains valid. ABS cautions manufacturers to review and maintain compliance with all other specifications to which the product may have been assessed. Further, unless it is specifically indicated in the description of the product; Type Approval does not necessarily waive witnessed inspection or survey procedures (where otherwise required) for products to be used in a vessel, MODU or facility intended to be ABS classed or that is presently in class with ABS. Questions regarding the validity of ABS Rules or the need for supplemental testing or inspection of such products should, in all cases, be addressed to ABS.